# Biologically Inspired Sensing and Coding of Signals

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**Abstract:** We discuss the role of biologically inspired spike representations in various engineering applications including sensor design, time-based signal processing, and power-efficient neural recording circuitry for brain-machine interfaces. These spike-based systems are shown to outperform conventional approaches in terms of various performance metrics such as power consumption, size, SNR, signal bandwidth and dynamic range. We also consider the implications this work has on our understanding of neurobiological systems.

**Speaker Bio:** Dr. John G. Harris received his BS and MS degrees in Electrical Engineering from MIT in 1983 and 1986. He earned his PhD from Caltech in the interdisciplinary Computation and Neural Systems program in 1991. After a two-year postdoc at the MIT AI lab, Dr Harris joined the Electrical and Computer Engineering Department at the University of Florida (UF). He is currently a full professor and leads the Hybrid Signal Processing Group in researching biologically-inspired circuits, architectures and algorithms for sensing and signal processing. Dr. Harris has published over 100 research papers and patents in this area. He co-directs the Computational NeuroEngineering Lab and has a joint appointment in the Biomedical Engineering Department at UF.

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